

Ground-Water Modeling with Analytic Elements: cultivating understanding of ground water systems Part III

6/7/01

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Ground-Water Modeling with Analytic Elements: cultivating *understanding* of ground water systems

Part III

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The University of Georgia



Outline

I. Introduction

II. AEM Basics

III. AEM Applications

IV. Future

III. AEM Applications

- Modeling of regional groundwater flow near proposed nuclear waste repository --- Yucca Mountain, NV
- Delineation of source water area for public water wells --- Vincennes, IN

An Analytic Element Model of The Yucca Mountain Region

An example of the use of real hydrogeologic boundaries and local refinement



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Journal
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www.elsevier.com/locate/jhydrol

Regional groundwater modeling of the Yucca Mountain site using analytic elements

M. Bakker^{a,*}, E.L. Anderson^{b,1}, T.N. Olsthoorn^{c,2}, O.D.L. Strack^{d,3}

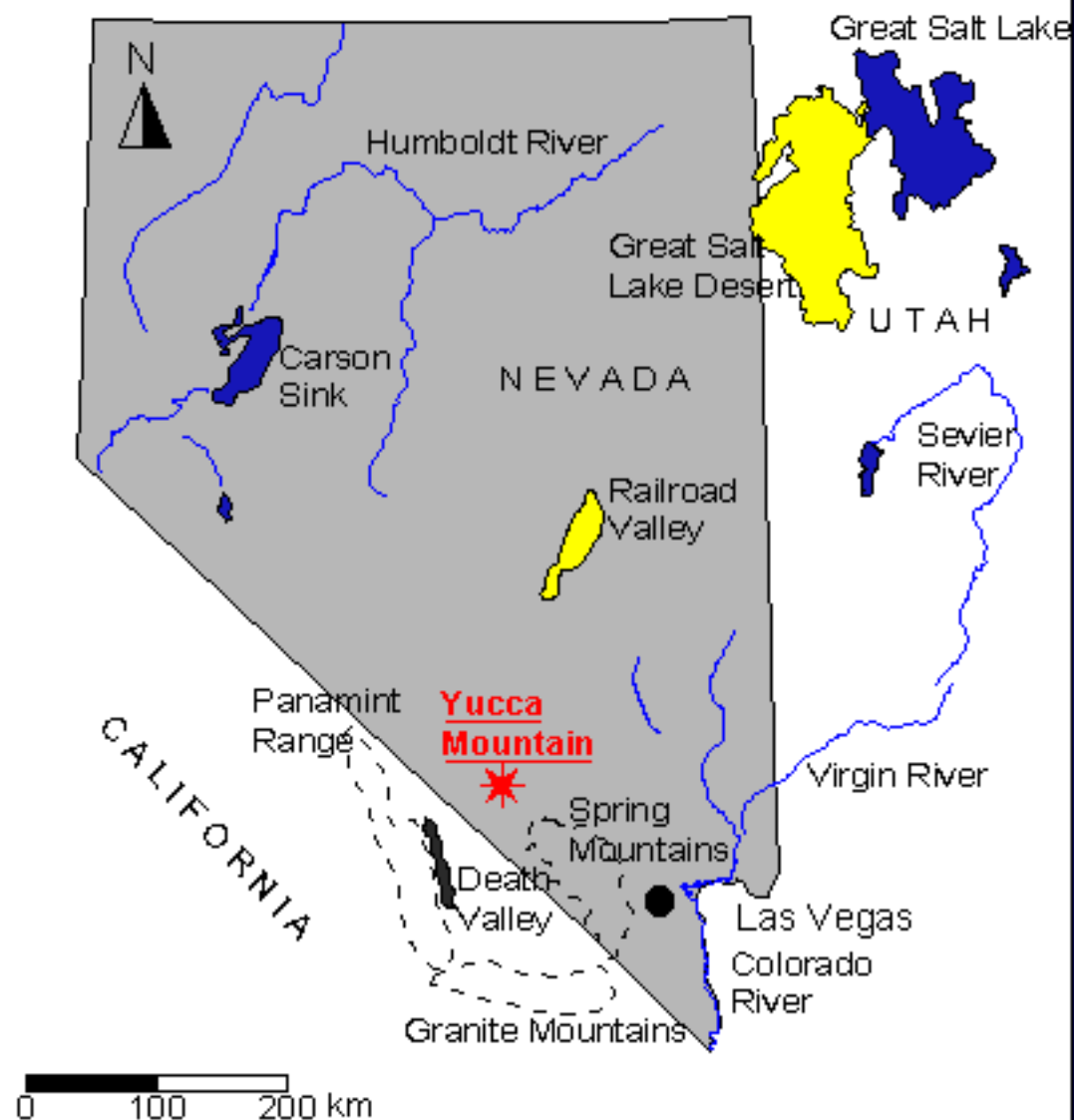
^aDepartment of Civil Engineering, University of Nebraska, Omaha, NE 68182, USA

^bSEH, Inc., Chippewa Falls, WI 54729, USA

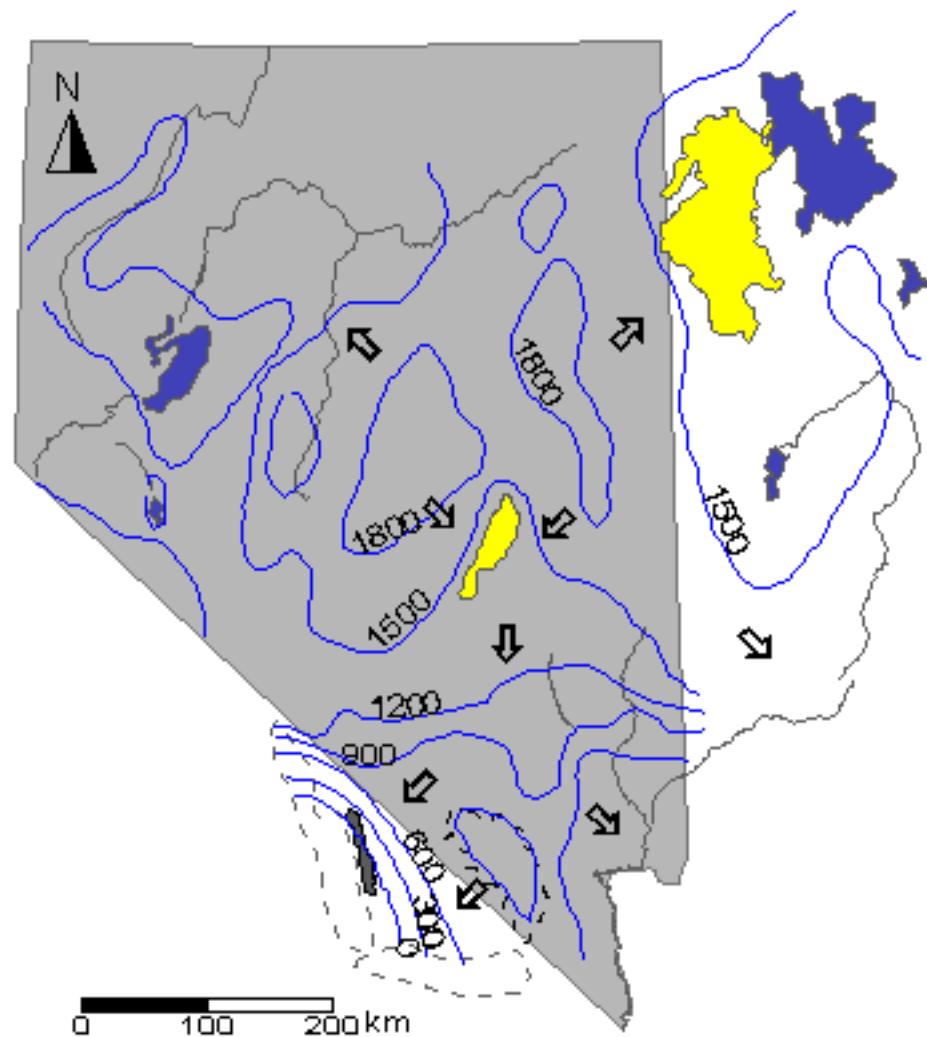
^cAmsterdam Water Supply, 2114 BA Voortmanweg, The Netherlands

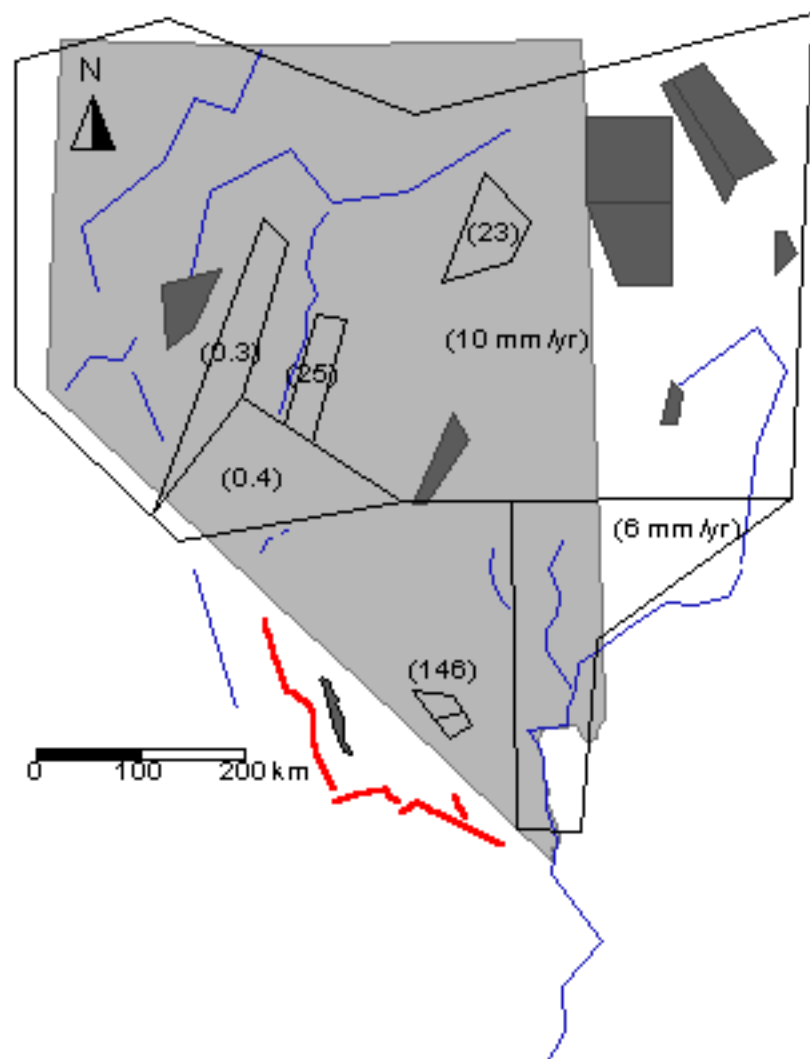
^dDepartment of Civil Engineering, University of Minnesota, Minneapolis, MN 55455, USA

Received 28 April 1998; accepted 14 September 1999





Interpreted contours (USGS)





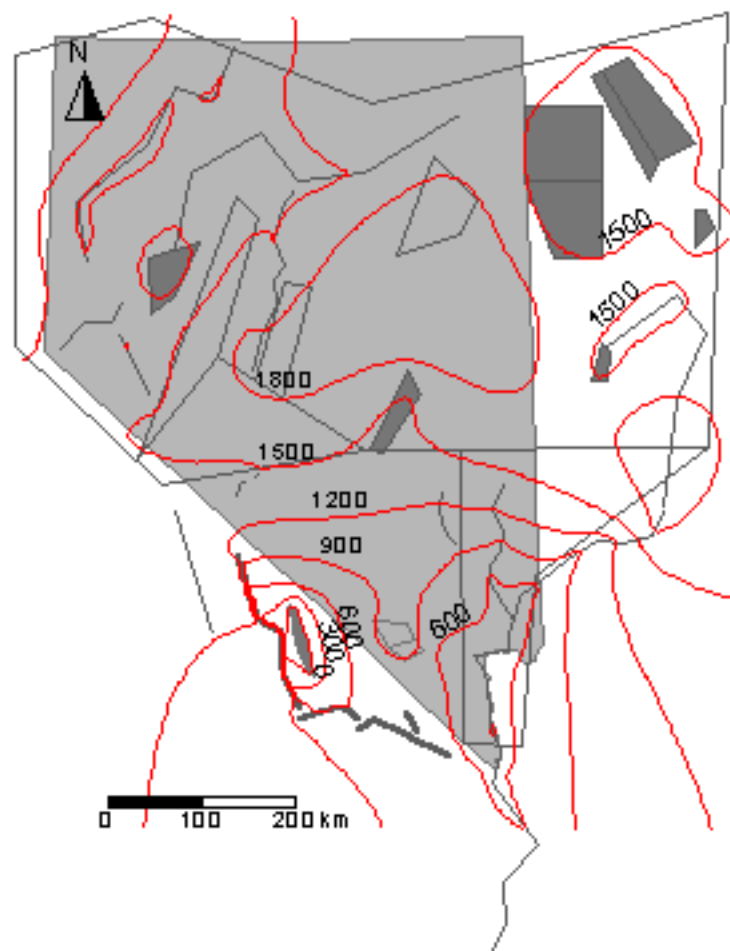
Analytic Elements in Far Field

- Line-sink
- Impermeable Wall
-  Given Area-sink (mm/yr)
-  Resistance Area-sink

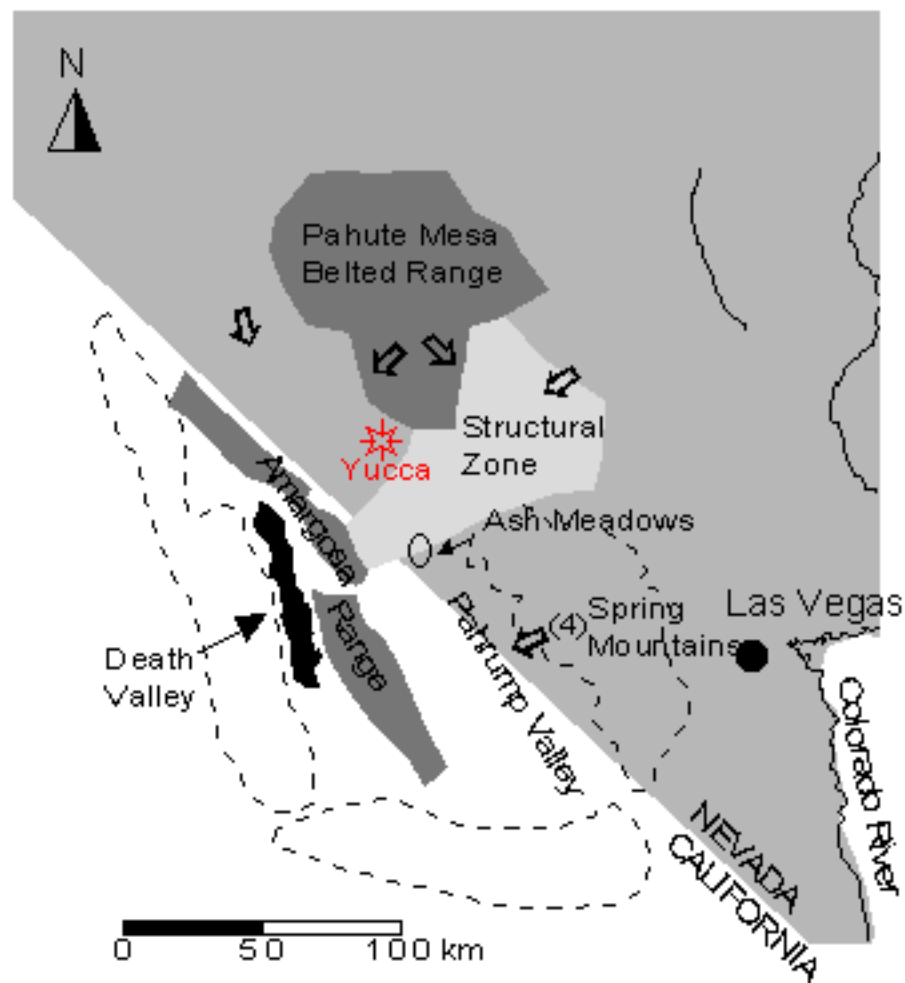
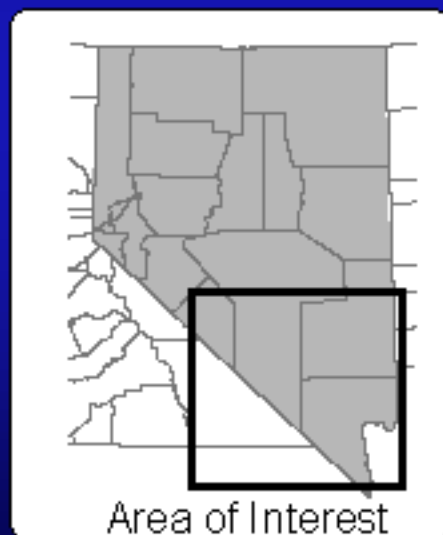
Far Field Results

Interpreted

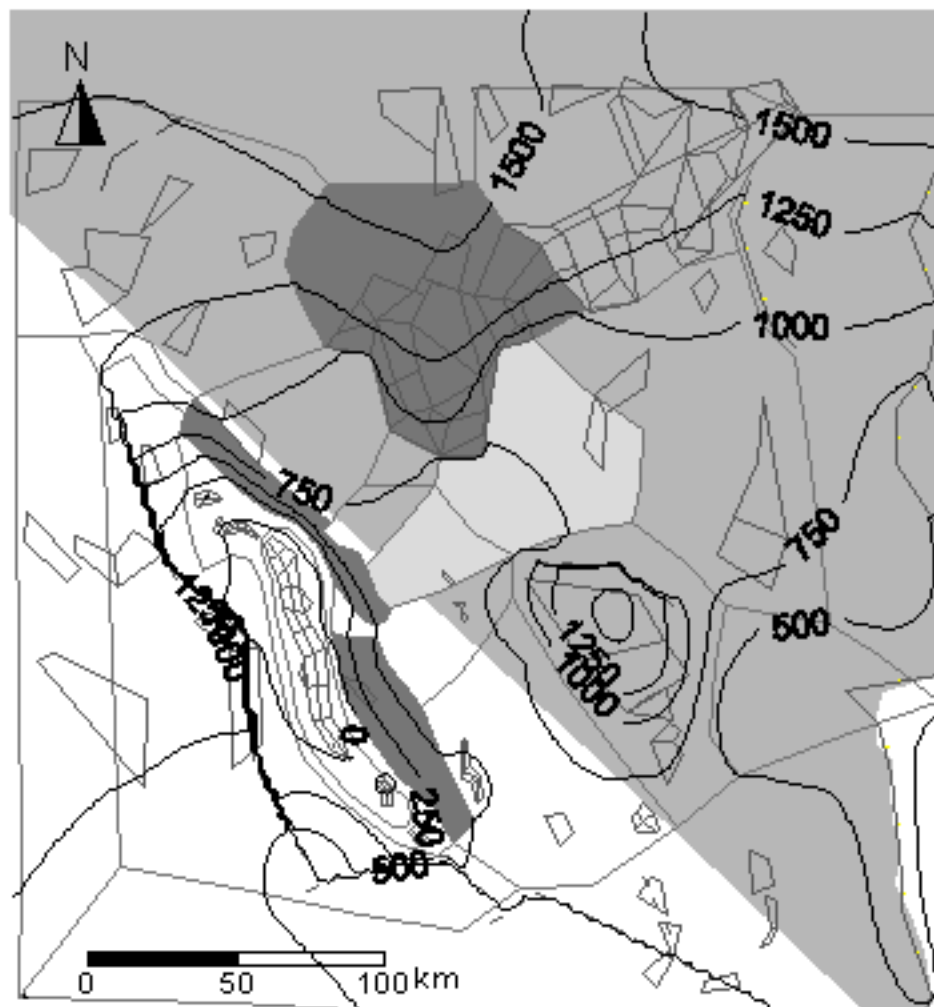
AEM simulation



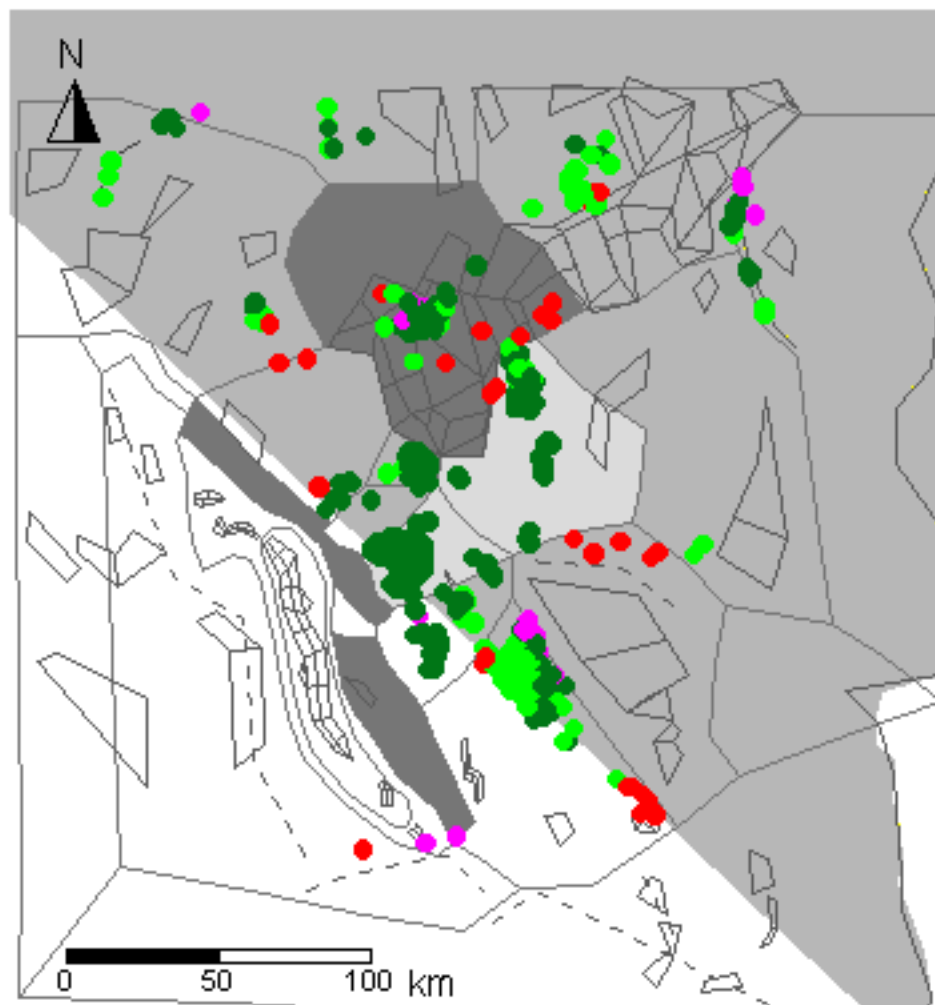
Add Detail in Area of Interest



Final Results



Difference between modeled and observed



Total drop in
head: 1500 m

< -50 ●
 -50 to 0 ●
 0 to 50 ●
 > 50 ●

Pathlines

